**SIMULATIONS WORKSHEET NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Three Children Families**

A family doctor is told by a couple that they wish to have three children and that they wonder what the possibility of having all of one sex of a child will be (they think that it will be the same as having 2 girls and 1 boy or having 2 boys and 1 girl). The doctor gives them an assignment to simulate having three children to answer their question. They will record the number of girls in each of their trials

1. Write instructions for performing 10 trials of the simulation using the section of the TRD below:
2. Perform 10 trials of the simulation

39634 62349 74088 65564 16379 19713 39153 69459 17986 24537 92740 92438 03957

14595 35050 40469 27478 44526 67331 93365 54526 22356 93208 02847 91374 15374

|  |  |  |
| --- | --- | --- |
| **X = # of girls** | **Frequency** | **Experimental Probability** |
| 0 |  |  |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| **Total Number of Trials** |  |  |

1. **Having a Boy**

Another family has met with the family doctor. They desperately want a boy and are willing to have as many children as possible until they get a son. They will record the number of children they have.

1. Write instructions for performing 10 trials of the simulation using the section of the TRD below:
2. Perform 10 trials of the simulation

39634 62349 74088 65564 16379 19713 39153 69459 17986 24537 14595 35050 40469 27478

44526 67331 93365 54526 22356 93208 30734 71571 83722 79712 25775 65178 07763 82928

31131 30196 64628 89126 91254 24090 25752 03091 39411 73146 06089 15630 42831 95113

43511 42082 15140 34733 68076 18292 69486 80468 80583 70361 41047 26792 78466 03395

17635 09697 82447 31405 02857 92348 12485 92837 01937 29034 22347 29847 10836 24782

|  |  |  |
| --- | --- | --- |
| Number of Children | Frequency | Experimental Probability |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7+ |  |  |

1. **Football**

A quarterback completes 65% of his passes. Suppose he attempts 12 passes in a game.

1. Write instructions for conducting one simulation trial that shows the results for each of the twelve passes in a game.
2. Conduct 6 trials using the following table of random digits. Be sure to label your results.

80583 70361 41047 26792 78466 03395 17635 09697 82447 31405 00209 90404 99457 72570

42194 49043 24330 14939 09865 45906 30734 71571 83722 79712 25775 65178 07763 82928

31131 30196 92347 60830 09230 47592 01832 05068 12838 12305 58506 37593 62941 17068

1. Based on your simulation what is the average number of passes he will make in a game?
2. **Football, part 2**

A receiver on the same team catches the ball 78% of the time. He usually has 9 passes thrown to him in a game.

1. Write instructions for conducting one simulation trial.
2. Conduct 10 trials using the following table of random digits. Be sure to label your results.

05409 20830 01911 60767 55248 79253 12317 84120 77772 50103

95836 22530 91785 80210 34361 52228 33869 94332 83868 61672

64628 89126 91254 24090 25752 03091 39411 73146 06089 15630

42831 95113 43511 42082 15140 34733 68076 18292 69486 80468

80583 70361 41047 26792 78466 03395 17635 09697 82447 31405

1. Based on your simulation what is the average number of catches he makes in a game?

# **Simulating getting Prizes from a Cereal Box**

Your favorite cereal is giving out Simpson toys as a promotion. One of six toys will be placed randomly in a cereal box. Assuming that shipment of the boxes is random also how many boxes would you have to buy to get all six toys?

1. Write instructions for conducting one simulation trial.
2. Run 10 trials of this simulation and record the results.

95836 22530 91785 80210 34361 52228 33869 94332 83868 61672 65358 70469 87149 89509 72176

18103 55169 79954 72002 20582 72249 04037 36192 40221 14918 53437 60571 40995 55006 10694

41692 40581 93050 48734 34652 41577 04631 49184 39295 81776 61885 50796 96822 82002 07973

52925 75467 86013 98072 91942 48917 48129 48624 48248 91465 54898 61220 18721 67387 66575

88378 84299 12193 03785 49314 39761 99132 28775 45276 91816

|  |  |
| --- | --- |
| Number of Boxes Purchased | Frequency |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |
| 11 |  |
| 12 |  |
| 13 |  |
| 14 |  |
| 15 |  |
| 16+ |  |

1. What is the average number of boxes needed to get all six toys?
2. What is the probability that it would take more than 12 boxes to get all six toys?
3. What is the probability that it would take less than 10 boxes?
4. What is the probability that it would take between 8 and 12 boxes to get all six toys?